Summer Schools and Short Courses

Glasgow Caledonian University Mathematics Summer School

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Abstract

The Summer School has operated on the same general principles since 1991. It helps prepare students for entry into programmes for which they have a conditional offer. It features tailored instruction, flexible attendance and delivery and continuous supportive feedback.

The Execution

The University decided in 1991 to run a pre-entry Summer School to help prepare students entering first year who have a time or a qualifications gap. Entry is by referral from an admissions tutor. There is no cost to the student and if a student matriculates, then he/she can claim travel expenses.

The Summer School is offered flexibly, with students able to attend one evening a week from Easter and then, in addition, during the day from the end of June. The Summer School finishes the week before registration. The three main entry points are as follows: post Easter for mature students who are making a return to education; late June for students who have the minimum qualifications for entry, but who are perceived by their admission tutors to have a weakness in mathematics; and early August, after the school exam results are published, for students who have failed to make the grade required in a conditional offer.

On the first day the student receives an information booklet giving full details of the operation and assessment, including the marking scheme for the required portfolio and an individualised progress chart giving details of the Computer Assisted Learning (CAL) lessons to be completed and the assessments to be undertaken. The average student is expected to complete the programme in 72 hours. The software (CALMAT) is available on most of the PCs on campus and can be purchased on a CD for home use. Completion data for CAL work done at home is merged with data on the campus server. Many students who purchase the system work at home, only attending supervised sessions when they need help or want to sit a test.

In addition to the progress chart containing the list of CAL lessons, each student is given paper-based materials related to the CAL lessons. We know that students use these materials in different ways, i.e. before, during or after using the software.

The required portfolio should contain learning plans, summaries, formulae and enough worked exercises to demonstrate competence in each section of the individualised syllabus.

The assessments are computer-delivered. They are not multiple choice. Mock tests are available and the actual tests are taken under supervised conditions.

What Support Was Needed?

The Summer School has been organised and facilitated from its inception by Mathematics Teachers who are familiar with the software used. Technical support was provided by faculty technicians in the early years; and latterly by the CALMAT group.

The Barriers

Prior to 2000, the software was loaded onto several servers on campus and the desktop faced by the student differed according to the room. In addition the student records were distributed over several servers. In 2000 a single server was acquired to deliver the software. This made life significantly easier for both staff and students.

Prior to summer 2001, the accommodation was in 20 seater computer rooms. This was costly and inefficient in the use of staff time. Because of the flexible attendance of students, something they value because it allows them to cope with either family commitments or part-time jobs, it was impossible to predict on any one day how many students would attend. In summer 2001 we had access to 80 computers in a single location in the library. The maximum number at any one session was 30 and a single tutor was able to cope.

Late applicants to the University are directed to the Summer School when the time to complete is insufficient. One might argue that some preparation before entry to the university is better than none, but their presence devalues the Summer School.

Each year, as registration time approached, admission tutors eager to meet their quota are tempted to convert conditional offers into unconditional ones. This results in some students not completing the Summer School.

Admissions Tutors sometimes have unrealistic ideas on what students can achieve during the period of the Summer School. This is demoralising for the students and impossible for the Summer School Tutors. Ten years down the line, this is still a problem!

The Enablers

Despite the difficulties that the flexible attendance has caused, we have maintained this aspect of delivery because of the advantages to the students. The availability of the large bank of computers and the single server has made this aspect of the delivery less of a nightmare.

The management system of the software provides continuous feedback to the student. The progress chart indicates what has still to be achieved. Without such feedback it would be difficult to monitor adequately the varied student body.

Every attempt is made to keep the number of different tutors that a student sees down to the minimum. This can be difficult over the summer period and we have been lucky in the last two years to employ a retired teacher as the main tutor.

The main Summer School office contacts students who are not making the progress expected. This is essential to keep Admission tutors informed on the number of students who are still holding places.

Evidence of Success

This is evidenced by the number of students who complete the Summer School and then go on to perform above average in the first year and later. Most of these students would not have been admitted to the university if they had not been able to attend the Summer School. One such student graduated with a first class honours in Statistics last year and is now reading for a PhD. Quotes from satisfied students include; "it allowed me to work at my own pace and concentrate on the areas where I had difficulty", "I was never able to do this at school", "it gave me a belief in myself" and "it was a lifeline".

There are failures. These are mainly students who do not put in the effort. It is probably better that they fail at this stage rather than in the first year.

How Can Other Academics Reproduce This?

- The main aspect is the flexible delivery and the constant supportive feedback to large numbers of students. It is hard to see how this could be achieved without the use of software with the capability of monitoring performance and the employment of computer-based assessments.

- The other factor which had a significant impact on the operation was finding a suitable location. This would not have been a problem had the numbers been either small or predictable.

- Staffing over the summer can be a problem. If there are several tutors involved then it is desirable that one be available throughout to provide continuity.

- The extensive bank of materials has developed over the years. It should not be underestimated how long this would take to develop from scratch. An important element of this are the guidelines for assigning a progress chart to a new student.

Quality Assurance

- There are no formal mechanisms in place.

- 75% of last year's Summer School were scheduled to enter programmes where the software used in the Summer School is an integral part of their learning experience in a first year module.

Reference

CALMAT; http://www.maths.gcal.ac.uk/calmat/; (13-09-02).